

A newly discovered muscle: The tensor of the vastus intermedius

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The quadriceps femoris is traditionally described as a muscle group composed of the rectus femoris and the three vasti. However, clinical experience and investigations of anatomical specimens are not consistent with the textbook description. We have found a second tensor-like muscle between the vastus lateralis (VL) and the vastus intermedius (VI), hereafter named the tensor VI (TVI). The aim of this study was to clarify whether this intervening muscle was a variation of the VL or the VI, or a separate head of the extensor apparatus. Twenty-six cadaveric lower limbs were investigated. The architecture of the quadriceps femoris was examined with special attention to innervation and vascularization patterns. All muscle components were traced from origin to insertion and their affiliations were determined. A TVI was found in all dissections. It was supplied by independent muscular and vascular branches of the femoral nerve and lateral circumflex femoral artery. Further distally, the TVI combined with an aponeurosis merging separately into the quadriceps tendon and inserting on the medial aspect of the patella. Four morphological types of TVI were distinguished: Independent-type (11/26), VI-type (6/26), VL-type (5/26), and Common-type (4/26). This study demonstrated that the quadriceps femoris is architecturally different from previous descriptions: there is an additional muscle belly between the VI and VL, which cannot be clearly assigned to the former or the latter. Distal exposure shows that this muscle belly becomes its own aponeurosis, which continues distally as part of the quadriceps tendon.

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